How Well Do Elected Officials Represent Their General Populations?

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Brenna

Hi everyone! As you all know, I'm Brenna, and this is Jared and Aidan.

For our project, we decided to investigate how well elected officials represent their general populations.

Background

Brenna

While there are elected officials at many different levels of government, our analysis focused on those who hold local positions at the town or city level.

Local elections have been noted for being one of “the nation’s foremost venues for the study of political behavior in the context of significant racial and ethnic diversity”.[1]

Considering this, voters in local elections may be motivated by the greater influence their vote would have within their community.

They may also be more likely to vote for candidates who are from their community as opposed to being geographically distant.

Therefore, local elections present the opportunity to be more reflective of the populations they represent.

Research Questions

- How do the demographics of the voting age population in states in the U.S. compare to their elected officials?
- Statewide, are males more represented than females among their elected officials?
- Statewide, are minority males more represented than minority females among their elected officials?

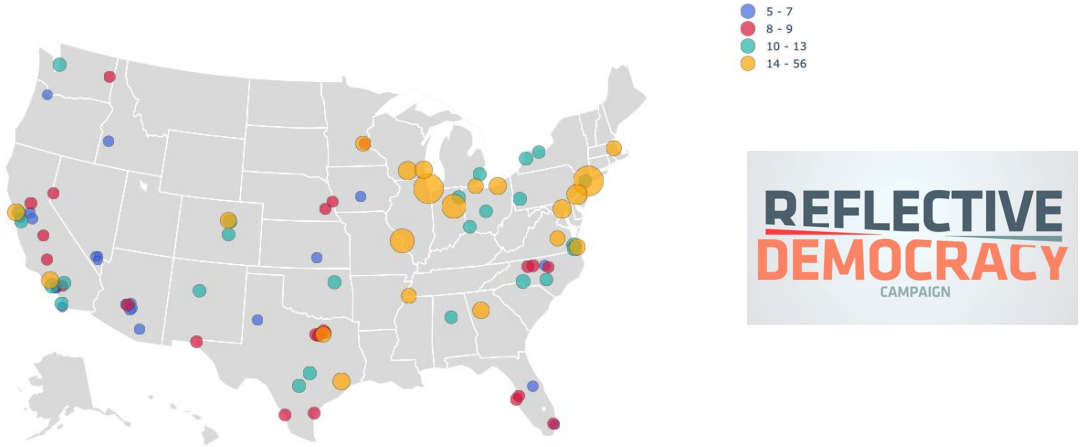
Aidan

First, we wanted to know how the demographics of the voting age population compared overall to elected officials, without subsetting the population by any single demographic.

To follow the first question, we were also interested in understanding what differences may exist along specific demographic trends. The first of these which was investigated was the difference between males and females among elected officials, initially without regard to race.

Finally, for added nuance and detail, we also investigated whether there were representation differences between non-white males and non-white females. This was similar to the second question, but sought to investigate if race and sex together produced any unique trends.

Data Sources



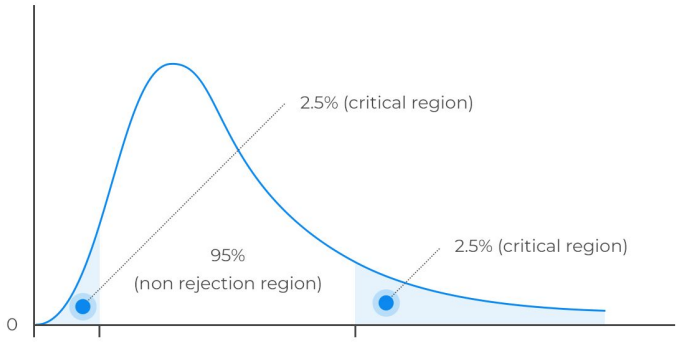
Aidan

To address these questions, our group utilized a data set published by the Reflective Democracy Campaign, a group which investigates and promotes women and people of color in elected offices across the United States. Analysis centered around a collection of **local officials in the 100 most populous cities that were in office in September of 2020**. The displayed map shows the location of the 100 cities, along with the number of recorded elected officials serving as individual data points for each.

A supplemental data set was also required in order to have information on the demographics of the voter population. This was obtained from a US Census Bureau publication on 2018 voter-age demographics.

When combining the two, most assumptions and filtering revolved around aligning different demographic categories. For example, in the census data a person's Hispanic or Latino ethnicity was recorded separately from race, while the elected officials data treated it directly as a racial identity. Therefore, to make a valid comparison, a person's recorded race in the census was overwritten with Hispanic or Latino if applicable. Other similar assumptions were required to be made for similar variables.

Statistical Methods

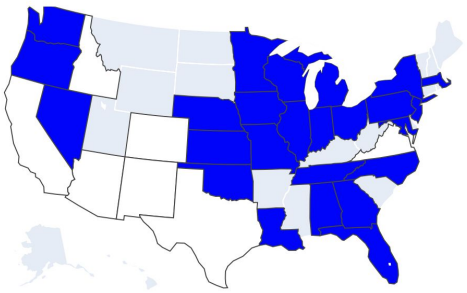


$$\chi^2$$

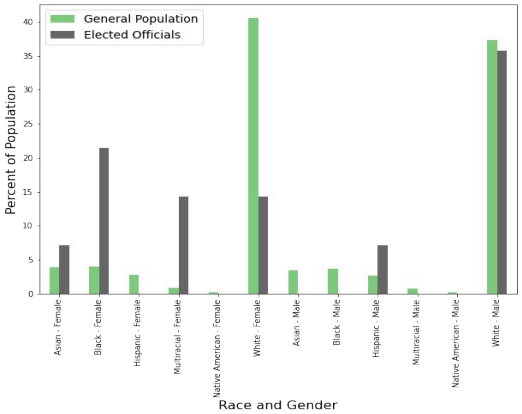
Jared

The main statistical method that was employed for this test was a chi-squared hypothesis test which was used to determine how well the sample data represents the general population's distribution of data. In this case the sample data was the elected officials data set. We chose to define the alpha value for statistical significance as a p-value of 0.05, representing a 95% confidence that differences were not due to random chance. The exact metric by which distribution is determined differs between the three research questions we are presenting, but the test is functionally the same. The different tests were meant to determine if patterns existed between which states had significant differences for distribution by race and those that had significant differences by sex, or both in combination.

Results: All Races and Genders



P-values for Race/Gender Representation



Comparison of General Population and Elected Officials for Massachusetts

Jared

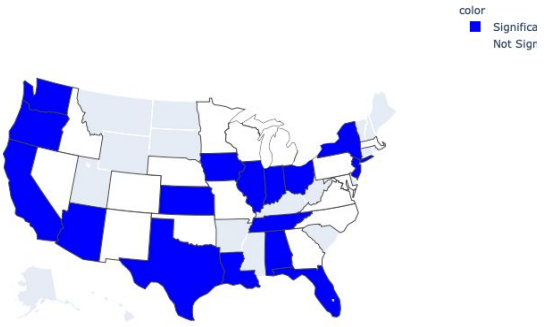
The graph on the left represents our findings for significance in distribution by both race and gender in combination. Blue states in the graph had distributions that had p-values below 0.05, meaning that for those states, our null hypothesis would conclude that the difference in distribution is statistically significant.

However not all states with significant differences reflect the patterns we expected. For example, the graph on the right shows the distributions of the general population and elected officials for Massachusetts. There were actually only 14 elected officials in our dataset for Massachusetts, but two of them are Multiracial females meaning that about 14% of the elected officials are from a population that only comprises about 1.5% of the statewide population. Conversely there are only two White Female elected officials for Massachusetts when they make up about 40% of the statewide population.

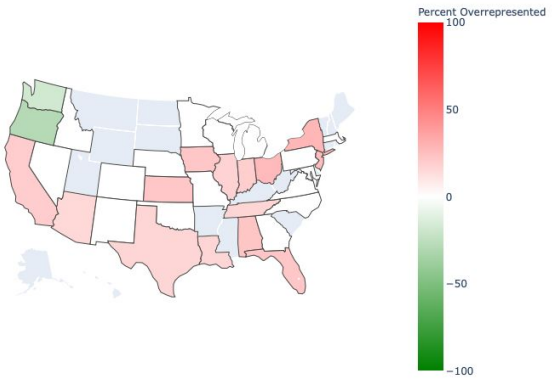
Thus, while the results suggest a narrative about the Western United States electing a more representative group of officials, the distribution is spread too thin for many of these states. There are effectively 12 potential race/gender categories for each state, and for many states, not many more elected officials than 12. So we tried to design our later research questions in a way that mitigated this problem by restricting the

number of comparisons.

Results: Males vs. Females



P-values for Gender Representation



Male Overrepresentation

Brenna

So, noting what Jared just mentioned, we also wanted to investigate simply Male vs Female representation comparisons between elected officials and their state populations.

Like on the previous slide, the blue states in the first figure are those that revealed significant differences between Male and Female elected officials and their population distributions, and the white states were those that did not result in a significant difference.

However, for the blue states, the first figure doesn't describe whether males or females are **more** highly represented. So we also produced the second figure, which displays the percentage of the overrepresentation of Males in the elected officials data set. As you can see, the red states represent a higher percentage of Male elected officials, and the green states represent a higher percentage of Female elected officials.

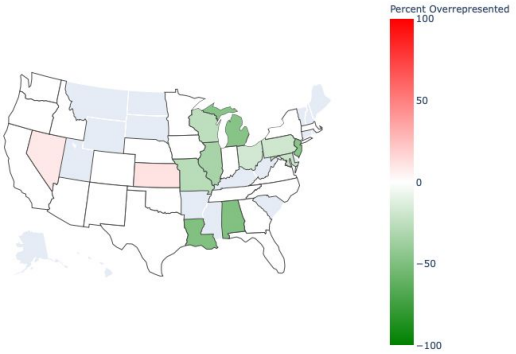
So a few main things to note in our analysis:

- Washington and Oregon are the only two states where there is an overrepresentation of Females among elected officials. Note that these two

- states are not represented by many data points, with Washington having 19 and Oregon having only five.
- California and New York had an overrepresentation of Male elected officials despite being generally more liberal states and having the largest number of data points in the data set.
- Overall, out of 33 states, about half showed an overrepresentation of either female or male elected officials, and the other half showed no significant difference between male and female elected officials.

Results: White vs. Non-White

White Overrepresentation, Female



White Overrepresentation, Male

Aidan
The final research question investigated whether representation of Non-white people differed between Males and Females.

Shown in the **figures** above, generally both Non-white Males and Females had a greater proportional representation than their White counterparts in the analysis. However, common studies of racial disparities in the US note that White people, and Males in particular, are overrepresented across government.[8]

After closer inspection, we believe this was due to a breakdown in the assumption that elected officials from urban areas could be compared to statewide demographics. An example of this is in Michigan, where the primary dataset contained solely elected officials from Detroit. While Michigan is on average 79% White, elected officials representing Detroit were 82% Non-White. While this was a significant difference in the context of the test, it is likely explained by the fact that the population of Detroit is 85% Non-white,[9] which is approximately what is represented among the recorded elected officials.

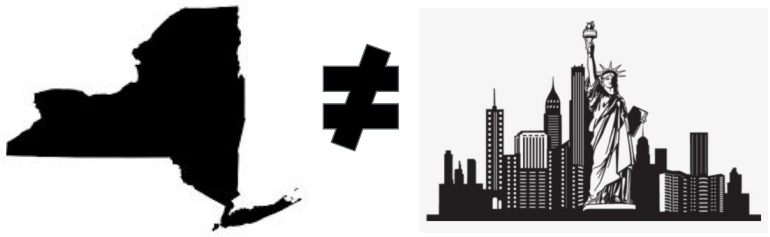
Potential Biases

Brenna

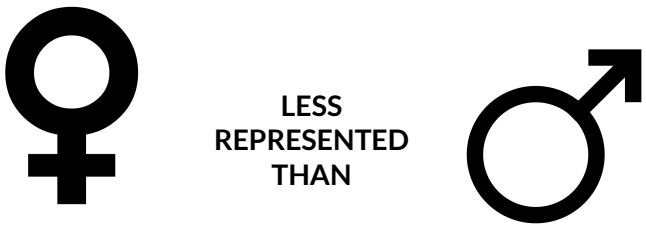
As we have reiterated throughout the presentation, the main bias of the analysis is not having sufficient data from the elected officials data set to represent an entire state's population demographics.

More specifically, a big concern that we saw, especially with the third research question, is that comparing an entire state's population distribution with that of one or several cities' may not be a robust comparison, even if the cities are large compared to others in the state. Other data collection organizations have noted that urban demographics have unique differences compared with states as a whole.[5] So in comparing urban elected officials with statewide population distributions, this analysis makes the assumption that these differences do not exist under the null hypothesis.

Conclusion



- Race/gender inconclusive
- Race inconclusive because of differing scale of samples
- Males almost always better represented than females
- Data may not be reliable though



Jared

In general, our three research questions have led us to three different conclusions. The first is that when broken into every combination of race and gender in the dataset, twelve categories stretches our population too thin, as most states don't have many more data points than 12, meaning that for the race-gender test, our results are inconclusive. For race alone, the fact we are effectively comparing apples and oranges, city-level populations and state-level populations, our results come out quite skewed as most cities in our datasets tend to have a higher percentage of minorities in their population compared to the state as a whole. However, we can somewhat conclusively say that males are as a whole, far more likely to exceed their portion of the population than females. As the portion of male/female populations should be roughly equivalent in most cities and states as a whole, the fact that half the states show an overrepresentation of men does indicate that there is some bias to elect male elected officials. It is also important to note that even traditionally liberal states like California and New York also reflect a significant bias towards males.

If we were to remake this test to come to a more robust conclusion, one of two avenues would have to be pursued. The first option would be to not use state-wide populations but rather the underlying city-level populations. The second would be to use state-wide elected officials rather than city-level elected officials. There are issues

with both though. There are neither enough state-level officials to have enough degrees of freedom for a chi-squared test nor typically enough city-level elected officials to have enough degrees of freedom in that case either. Thank you for your time.